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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,736	08/19/2003	Kevin L. Miller	1875.3930000	3801

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EXAMINER
MAI, LAM T

ART UNIT	PAPER NUMBER
2819	

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/642,736	MILLER, KEVIN L.
	Examiner	Art Unit	
	LAM T MAI	2819	

-- *The MAILING DATE f this communication appears on the cover sheet with the corresp ndence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2003*.
2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1,2,8-13,19-24 and 30-34* is/are rejected.
7)☒ Claim(s) *3-7,14-18,25 and 29* is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
        application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Specification

1.   Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1-2, 8-13, 19-24, and 30-34 are rejected under 35 U.S.C. 102(b) as being

anticipated by Norsworthy (USP 5144308).

Regarding claims 1 and 12, Norsworth discloses a technique for reduce idle tone

using high level dither signal in figure 2 that teaches:

Number generating mean (18) for generating a series of numbers having

random (col. 2, lines 65-66) characteristics;

Filter means (11)(col. 2, line 17) connected to the number generating means for

processing and producing digital (col. 1, lines 12-15) data stream representing a

spectrally shaped signal; and

Adding (col. 2, lines 14-18) the data stream to a series of signal values

processed by a signal processing circuit (9) thereby reducing idle tone generation (See

abstract; col. 2, lines 63-65; col. 3, lines 55-63; col. 4, lines 60-68; and col. 5).

4.   Regarding claims 2 and 13, Norsworth taught in col. 2, lines 65-68 and col. 3,

lines 1-8) that the series of number having random characteristics may be in

rectangular, triangular, Guassian, etc. formats.

5.   Regarding claims 8 and 19, col. 7, lines 27-31 and col. 8, lines 41-43, Norsworth

teaches the number generating means comprises a pseudo-random number sequencer

(generator).

6.   Regarding claims 9 and 20, col. 7, lines 27-31, Norsworth teaches the pseudo-

random number generating operates using a linear feedback shift register.

7.   Regarding claims 10 and 21, col. 6, lines 7-17, Norsworth discloses the signal

processing circuit is a digital modulation circuit or may be in analog form.

8.   Regarding claims 11, and 22 and 33, Norsworth discloses in col. 1, lines 11-24

that sigma delta technique (digital modulator or analog modulator) are finding wide

acceptance in many application.

9.   Regarding claim 23 Norsworth discloses a technique for reduce idle tone using

high level dither signal in figure 2 that teaches:

A number generating (18) that generates a series of numbers having random

(col. 2, lines 65-66) characteristics;

A digital filter (11)(col. 2, line 17) connected to the number generating means for

processing and producing digital (col. 1, lines 12-15) data stream representing a

spectrally shaped signal; and

A summing (17) that add (col. 2, lines 14-18) the data stream to a series of signal

values processed by a signal processing circuit (9) thereby reducing idle tone

generation (See abstract; col. 2, lines 63-65; col. 3, lines 55-63; col. 4, lines 60-68; and

col. 5).

10.   Regarding claim 24, Norsworth taught in col. 2, lines 65-68 and col. 3, lines 1-8)

that the series of number having random characteristics may be in rectangular,

triangular, Guassian, etc. formats

11.   Regarding claim 30, col. 7, lines 27-31 and col. 8, lines 41-43, Norsworth teaches

the number generating means comprises a pseudo-random number sequencer

(generator).

12.   Regarding claim 31, col. 7, lines 27-31, Norsworth teaches the pseudo-random

number generating operates using a linear feedback shift register.

13.   Regarding claim 32, col. 6, lines 7-17, Norsworth discloses the signal processing

circuit is a digital modulation circuit or may be in analog form.

14.   Regarding claim 34 Norsworth discloses a technique for reduce idle tone using

high level dither signal in figure 2 that teaches:

A digital modulator (9) (col. 4, lines 60-67) having a digital input that receives a series of values representing amplitudes of an input audio signal at a first level (13(1)) of precision and a digital signal processing circuit that quantizes (16) the received values as a digital signal at a second level (13(n)) of precision and generates an output representing the digital signal;

A number generating (18) that generates a series of numbers having random (col. 2, lines 65-66) characteristics;

A digital filter (11)(col. 2, line 17) connected to the number generating means for processing and producing digital (col. 1, lines 12-15) data stream representing a spectrally shaped signal; and

A summing (17) that add (col. 2, lines 14-18) the data stream to a series of signal values processed by a signal processing circuit (9) thereby reducing idle tone generation (See abstract; col. 2, lines 63-65; col. 3, lines 55-63; col. 4, lines 60-68; and col. 5).

Allowable Subject Matter

15.   Claims 3 and 14 and 25 are objected to as being dependent upon a rejected base claim, but they would be considered for allowable if they are rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teaches or suggest the digital filter has high pass filter characteristics.

16.   Claims 4 and 15 and 26 are objected to as being dependent upon a rejected base claim, but they would be considered for allowable if they are rewritten in

independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teaches or suggest the filter means produces a spectrally shaped signal represented by the data stream that is attenuated at low frequencies with it energy concentrated in a band above 20 kHz.

17.   Claims 5 and 16 and 27 are objected to as being dependent upon a rejected base claim, but they would be considered for allowable if they are rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teaches or suggest the spectrally shaped signal represented by the data stream has its energy concentrated in a band above 40 kHz.

18.   Claims 6 and 17 and 28 are objected to as being dependent upon a rejected base claim, but they would be considered for allowable if they are rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teaches or suggest the series of numbers having random characteristics are processed in two's complement format.

19.   Claim 7 is objected to as being dependent upon a rejected base claim, but it would be considered for allowable if it is rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teaches or suggest adding data stream is performed selectively when the series of signal values represents a signal amplitude below a predetermined threshold.

20.   Claim 18 is objected to as being dependent upon a rejected base claim, but it would be considered for allowable if it is rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to

teaches or suggest dithering control mean for selectively adding the data stream to the signal value only when the series of signal values represents a signal amplitude below a predetermined threshold.

21.   Claim 29 is objected to as being dependent upon a rejected base claim, but it would be considered for allowable if it is rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teaches or suggest a control circuit that selectively actuates the summing circuit to add the data stream to the signal value only when the series of signal values represents a signal amplitude below a predetermined threshold.

Cited References

22.   The prior art made of record and not replied upon is considered pertinent to application's disclosures. The cited references relate to improve dither signal for reducing idle tone (noise).
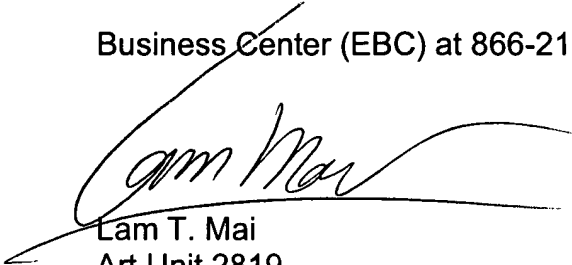
Conclusion

23.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM T MAI whose telephone number is (571)272-1807. The examiner can normally be reached on 6:00 am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Tokar can be reached on (571) 272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Lam T. Mai
Art Unit 2819